

Education Heterogeneity of China Internal Migration and the Effect to the Future Population Dynamic

Extended Abstract by Yingji Wu and Samir KC

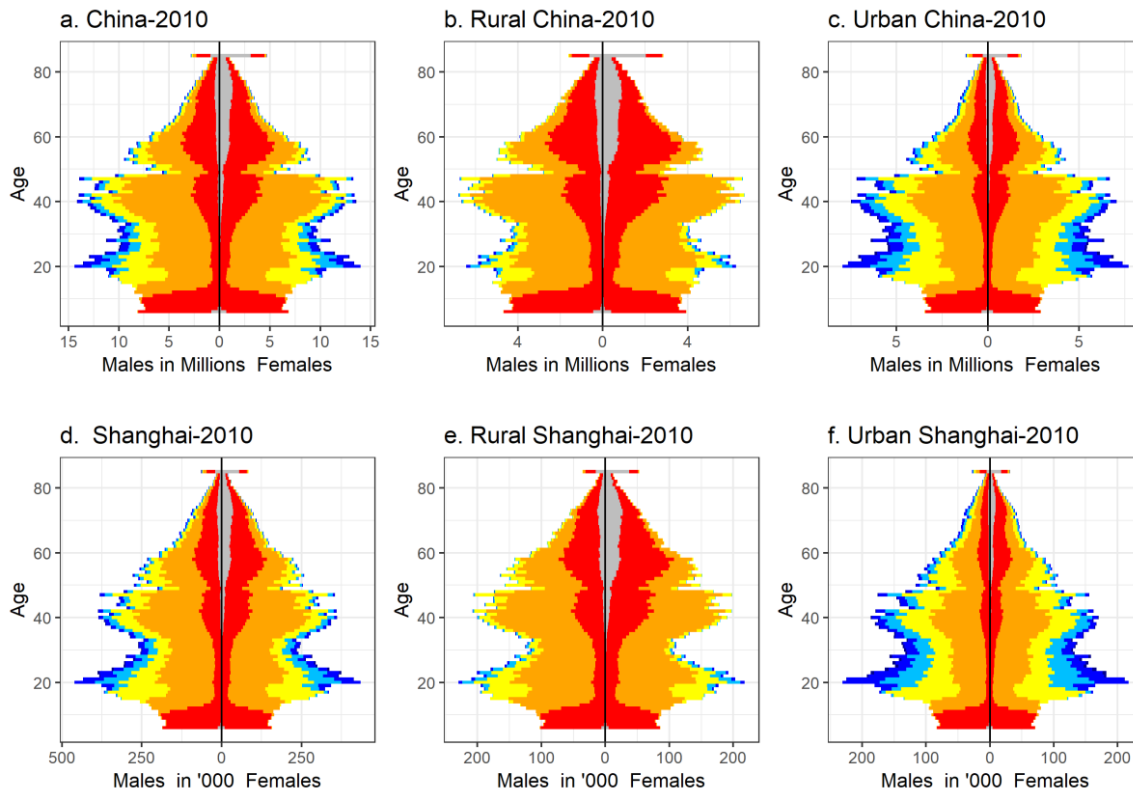
Introduction

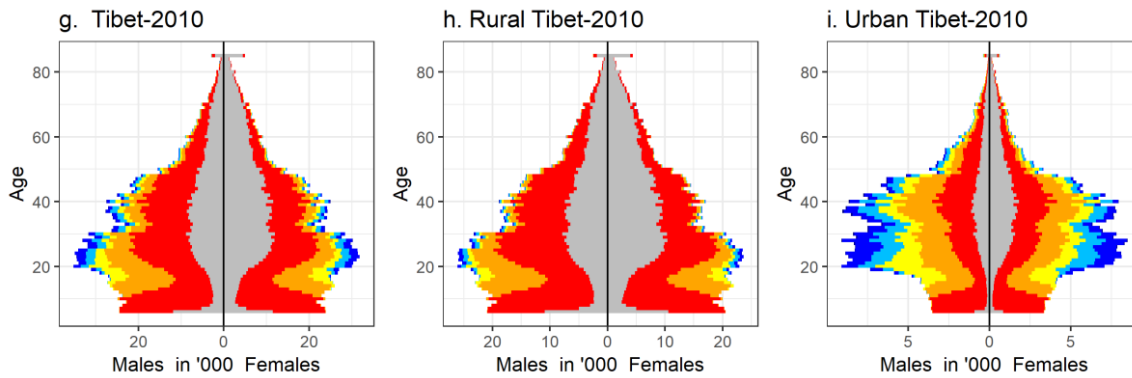
China's population increase has slowed down after its fertility was getting lower in the past decades. It seems impossible to reverse this trend even the new released two-Child policy while most of the better-educated women are more likely to spend their time and energy for self-improve and enjoy their life. However, the enormous floating population highly affects the spatial population distribution in China. Millions of populations migrate from western to eastern provinces and from rural areas to urban. It is believed that education and internal migration become two more important population dimensions for China population dynamics and distribution in the future. In this paper, we will use the micro-sample data from China Census 2010 to analyze the education difference of the internal migration and the influence on China population distribution. We will also analyze how the current internal migration education pattern will shape the future China population dynamics.

Data

We calculate the population distribution by single age, sex, and educational attainment by rural, town, and city in 31 provinces from the Census of 2010(National Bureau of Statistics of China 2011). We have also extracted demographic data from the micro-sample data of the Census of 2010(population, births, deaths, internal) by age, sex, and educational attainment in rural and urban regions for each of the 31 provinces in China. Based on these data, we get the population distribution of China by age, sex, province, residence, and education. Figure 1a below shows the population distribution by age, sex, and educational attainment. Compare Figure 1b and Figure 1c, we can observe the huge educational attainment heterogeneity between rural and urban in China.

Figure 1: Population distribution by age, sex, and educational attainment for China, Tibet, and Shanghai by rural and urban areas in 2010





Moreover, among different provinces in China, we observed a great spatial heterogeneity, such as a very low educational attainment level in Tibet (Figure 1g-i) as compared to a much higher level in Shanghai (Figure 1d-f). Except for the difference in social-economic development, one of the main reasons for the huge educational attainment heterogeneity between rural and urban or among different provinces in China is the education difference in the internal migration pattern.

Method

Using the data from census 2010, we calculate the age-specific population distribution by sex, rural/urban, and educational attainment in 31 provinces of China. It will be the starting point for our research. Further, the internal migration data by age, sex, and education we calculate from census 2010 will show how the spatial migration flows in China and the heterogeneity among the different age groups, sex, and education groups. We will apply the age-specific analysis to learn the age difference of the internal migration among different educational attainment groups.

We are developing a multi-regional multi-state population projection model (including dimensions age, sex, residence, province, education, and migration) for China, earlier developed for India by KC et al. (Kc et al. 2018), to project the population under various educational and demographic scenarios. Education differences in migration will highly impact the education distribution in a different area of China, which will further shape the population dynamics of China and at its sub-national level. We will take the education difference of internal migration into consideration when we set the educational scenarios for the China population model. One of the authors of this paper has been the key to develop such a model for the whole world (Abel et al. 2016) and India. At the European population conference, we are expected to show how the education difference of internal migration will influence the estimated future population dynamics, including the population distribution, fertility, life table under this sub-national population projection model.

Finally, the result of the projection model will be used to understand the population dynamics and its spatial distribution at the sub-national level in the future and proposed possible suggestions for the policymaker. We will also plot the education difference in migration and the projection model on the map to show the result in the visualizable ways.

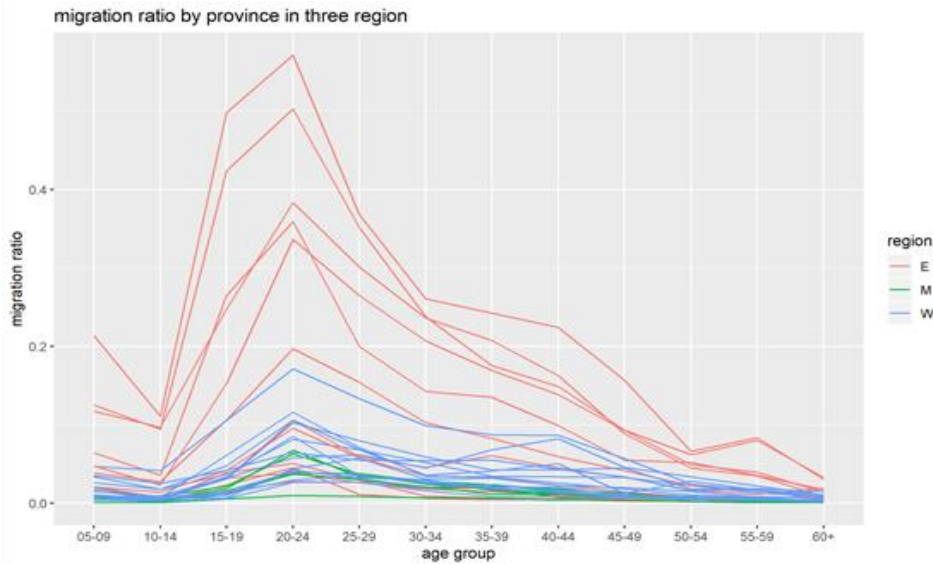
Preliminary result

In the 2010 census, the five-year interprovincial migration rate is increasing a lot to 4.61% compared with the interprovincial migration from 1995-2000 in the census 2000 (Liang, Li, and Ma 2014). It is higher than the migration rate of many developing countries in the world but still much lower than in America. The sharp increase of the interprovincial migration shows a significant change in the socio-economic development in the past decade, and the population is more mobile during this time.

China's internal migration is highly related to economic development; The better developed eastern provinces are more likely to attract the migration population. Figure 2 shows the province in the eastern area attract many

migrate population, especially the young cohort, and most of the provinces in central and western provinces are lost in the migration competition. Regarding the age difference in the migration, the young cohort from 15-44 is the main migrate cohort in China, and in most provinces, the migration peak appears around age 20-24. However, in many provinces, there are more and more migrations in the elder age group.

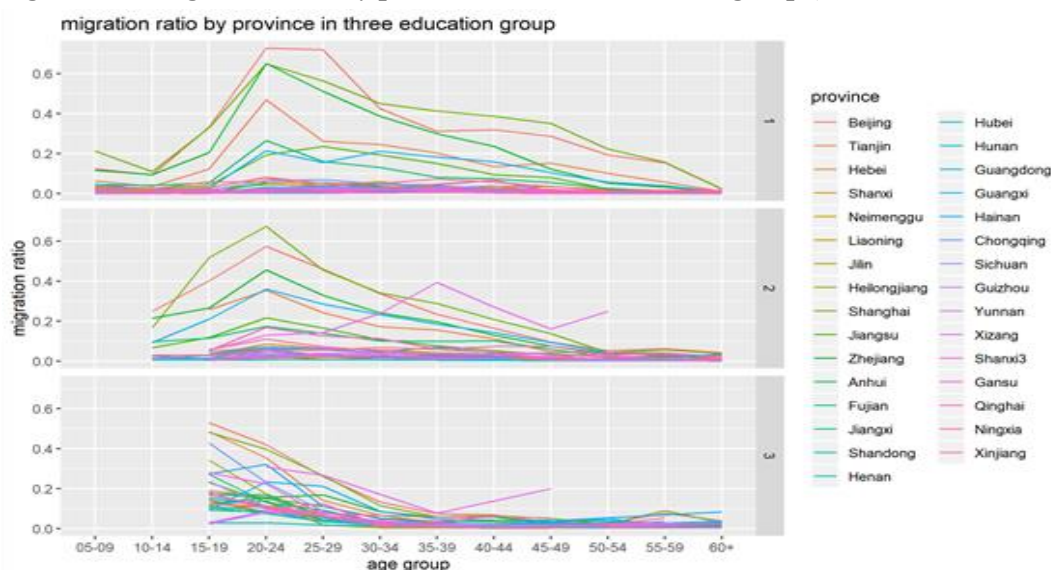
Figure 2: Immigration ratio by the province in China three regions (Source: Census 2010, NBS-China)



(Note: E: Eastern area in China including province Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Hainan, Liaoning; M: Middle area or Central area including Jilin, Heilongjiang, Shanxi, Anhui, Jiangxi, Henan, Hunan, Hubei; W: Western area including Guangxi, Chongqing, Sichuan, Yunnan, Guizhou, Tibet, Qinghai, Gansu, Xinjiang, Shanxi, Inner Mongolia, Ningxia)

In China 2010 census, the internal migration shows a big difference in different educational attainment groups. According to the 2010 census data, the lower education group is more mobile than the higher education group. The higher education group are usually will spend more time on education in their early lifetime, so the start of migration getting later with the increasing educational attainment level.

Figure 3: Immigration ratio by provinces in three education group (Source: Census 2010, NBS-China)

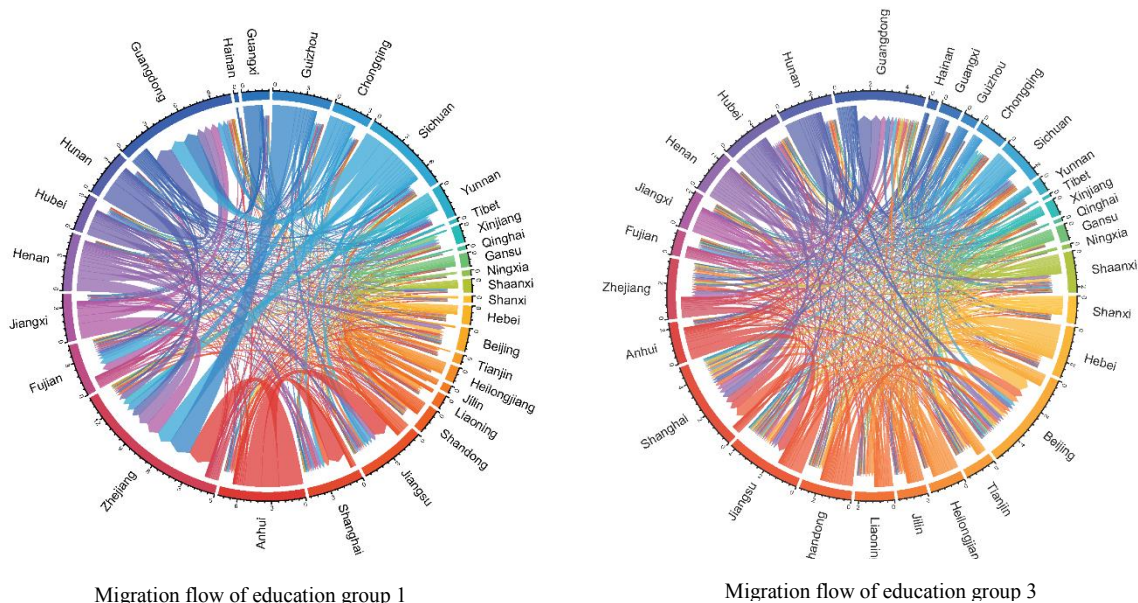


(Note: Education group 1: Primary education and below; 2: Secondary education; 3: Tertiary education or post-secondary education)

Figure 3 shows that people always start their migration after they finish their education in the secondary

education group and below. However, the post-secondary education group reaches the migration peak at age 15-19, which is much earlier before they finish their education. This reason for the difference is most likely the highest education group always finish their secondary education and go to other provinces for higher education at their age 15-19. However, if we compare the migration after people finish their education, we find that the lower education group is still keeping a high rate of migration, even they are getting older. Regarding the tertiary education group, few of them migrate to a new place after age 40, which shows the better-educated population is much easier to settle down in the more developed provinces than the lower education group.

Figure 4: Internal migration flow of female in different education groups



In China, different groups also have a different migration destination. Figure 4 shows that the educational attainment group with primary and below are more likely to go Zhejiang and Guangdong provinces where they have labor-intensive industry. While provinces like Shanghai and Beijing attract a lot of high education population for their high-technology industry, university and research institute. The difference in education structure of migrants will shape different population education distribution of these areas and further the population dynamic in the future. Also, Figure 4 shows how the migration flows in China between its 31 provinces. Henan, Anhui, and Sichuan province contribute a big stock in the emigration, and most of the migration flows to the megalopolis around Beijing, Shanghai and Guangdong province.

Discussion and Expected Conclusions

The education difference in migration will reconstruct the population and education attainment distribution in different provinces in China. Furthermore, the change of education structure of the population will further influence other demographic components in both the origin and destination areas of migration, such as fertility and life expectancy. For example, the higher education group usually have a lower fertility level in China(Feng, Cai, and Gu 2013), the keeping immigration of high-level educational attainment population in the Eastern area brings the fertility in those areas to a deficient level. We can imagine that if most of the better education population migrate to the city and eastern area and settle down in these areas, the gap in the educational attainment of the population between these areas and the less developed areas will keep increasing. At the same time, these areas also attract much young population from the less developed area. These better-developed areas will become more competitive both in population structure and human capital, while it will be more difficult in development for those areas lost their higher education population and labor force. To break this cycle, the

policymaker in the central government of China and local government in less developed areas should release new policies to attract the better-educated population and investigate the industrial to provide jobs for the young labor force in those areas.

To study this issue in a long-term circumstance, we will develop a sub-national multi-state projection model to estimate the possible future under different scenarios, including different scenarios of education and migration. The result of this model will help to draw the picture in the future under different circumstances, which will help to propose some predictable policy and avoid the unexpected future.

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